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NOMENCLATURAL NOTES ON GENERA OF NORTH AMERICAN EULOPHIDAE (HYMENOPTERA: CHALCIDOIDEA)

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Abstract.—The systematic placement of the genera in the subfamilies Eulophinae and Euderinae of the Eulophidae (Hymenoptera: Chalcidoidea) of North America were reviewed. Two new genera are described: ***Cristelacher*** and ***Dasyeulophus***. Thirty genera are included in the Eulophinae and five in the Euderinae. Four new generic synonymies are proposed in the Eulophinae: *Notanisomorpha* Ashmead = *Hemiptarsenus* Thomson; *Mirolynx* Girault and *Pseudolynx* Girault = *Aulogymnus* Förster; *Cirrospiloideus* Ashmead = *Elachertus* Spinola. One new generic synonymy in the subfamily Entedoninae is proposed: *Aabacharis* Schauff = *Eprhopalotus* Girault. Nine genera are recorded from North America for the first time: *Colpoclypeus* Lucchese, *Cristelacher* Schauff and LaSalle, Gen. n., *Dasyeulophus* Schauff and LaSalle, Gen. n., *Deutereulophus* Schulz, *Diglyphomorpha* Ashmead, *Euplectromorpha* Girault, *Notanisomorphella* Girault, *Platyplectrus* Ferrière, and *Xanthellum* Erdös & Nov. Thirty two new combinations are proposed and a lectotype is designated for *Cirrospiloideus playnotae*. A table of the genera of North American Eulophinae, with their current placement is given.

Key Words: Taxonomy, nomenclature, Eulophidae, Eulophinae, Euderinae, North America

There have been numerous changes in generic limits and placements in the family Eulophidae since the publication of the most recent catalog for North America (Burks 1979). Two subfamilies have been or are being revised (Entedoninae by Schauff 1991, Tetrastichinae by LaSalle, in press), and several genera have been moved from previously assigned subfamilies and tribes to new placements within the family. Joint work by the authors uncovered a number of new problems with generic limits and placements in the two remaining subfamilies. Eulophinae and Euderinae as well as several genera not previously recorded from North America. It is necessary to publish these changes so that an upcoming key to genera of North American Eulophidae reflects the most recent research findings on this group.

Classification of Eulophidae

The scheme of higher relationships followed here differs from that used by Burks (1979) (see Table 1). Burks recognized three subfamilies: Eulophinae, Entedoninae (as Entedontinae), and Elasminae. His overall concept of the subfamily Eulophinae is essentially the same as the one we are using. He included three tribes: Eulophini, Elachertini and Euplectrini; we include the Eulophini and Euplectrini, and consider the Elachertini is belonging in the Eulophini (see discussion below).

Burks also included three tribes in his subfamily Entedoninae: Euderini, Tetrastichini and Entedonini. These tribes have since all been regarded as deserving subfamily status (Graham 1987, Bouček 1988, Grissell and Schauff 1990), and we differ from Burks (1979) in treating these groups at this level.

Finally, Burks included the Elasmidae as a subfamily in the Eulophidae. Elasmids are believed to be very closely related to eulophids, and the relationship between the two groups is still under study. However, for the time being we are following the lead of recent authors (Bouček 1988, Grissell and Schauff 1990) and maintaining the Elasmidae as a distinct family.

Scope and Treatment

This paper attempts to clarify any nomenclatural problems concerning the Eulophinae and Euderinae which have arisen since Burks (1979). We thus include all genera: 1) that were treated as Eulophinae or Euderinae by Burks (1979), regardless of their current placement; 2) which were listed in other subfamilies by Burks, but which have subsequently been moved into the Eulophinae or Euderinae; 3) which have since been recorded from North America. Additionally, we treat two genera whose placement was considered uncertain by Schauff (1991), but which we now place in the Entedoninae.

As the present work is intended to complement the North American catalog (Burks 1979), we are not repeating synonymic information for genera treated in the catalog except where changes have been made (i.e. new generic synonymies). However, we do include this information for genera newly recorded for the region, and we make reference to any recent revisionary work not mentioned in the catalog. Genera are arranged alphabetically within each subfamily. Valid genera are numbered and in boldface. Acronyms for museums are: USNM, U.S. National Museum of Natural History, Washington, D.C.; BMNH, The Natural History Museum, London; CNC, Canadian National Collection, Ottawa.

Table 1. Difference in treatment of subfamilies and tribes of Eulophidae between the most recent North American catalog (Burks 1979) and the present treatment.

Burks 1979	Present Paper
Family Eulophidae	Family Eulophidae
Eulophinae	Eulophinae
Eulophini	Eulophini
Euplectrini	Euplectrini
Elachertini	
Entedoninae	Entedoninae
Tetrastichini	Tetrastichinae
Euderini	Euderinae
Entedonini	
Elsaminae	Family Elasmidae

Subfamily EULOPHINAE

Although the limits of the Eulophinae are now generally accepted, there is no consensus on relationships within the subfamily. Burks (1979) included three tribes: Eulophini, Elachertini and Euplectrini. Bouček (1988) included six tribes in the Eulophinae. Two of these (Anselmellini and Keryini) are based upon aberrant Australian forms, and are not relevant to this work. The remaining four tribes (Ophelimini, Eulophini, Elachertini, Euplectrini) are found in all regions of the world.

As discussed by Bouček (1988), the separation of these four tribes is not easy. Characters which have traditionally been used, such as the presence or absence of notauli, may vary within a single genus. Boucek was aware of these problems, and in a discussion of the tribal limits of the Eulophini (Bouček 1988: 691) said, "The similarities may constitute convergencies but it is also possible that they reflect genuine relationship, in which case it seems that the present tribes Ophelimini, Elachertini and Eulophini should be united. Because of these difficulties, the tribes are maintained but could not be keyed out."

Table 2. Generic names associated with North American Eulophinae, either in Burks 1979 or since. **Bold** indicates a currently valid eulophine genus which is found in North America. ENT, Entedoninae; Ela, Elachertini; Eul, Eulophini; Eup, Euplectrini; Oph, Ophelimini; TET, Tetrastichinae.

Generic Name	Burks 1979	Boucek 1988	Present Paper	
Apterolophus Gahan	Ela		TET	Removed to Tetrastichinae by LaSalle and Schauff (1990) and synonymized with *Tetrastichomyia.*
Ardalus Howard	Ela	Ela	Eul	Synonym of *Elachertus*
***Aulogymnus* Förster**	Ela	Oph	Eul	
Cirrospiloideus Ashmead	Ela		Eul	Synonym of *Elachertus*
***Cirrospilus* Westwood**	Ela	Oph	Eul	
***Colpoclypeus* Lucchese**			Eul	Newly recorded from North America in this paper.
***Cristelacher* gen. n.**			Eul	Newly described in this paper.
***Dahlbominus* Hincks**	Eul		Eul	
***Dasyeulophus* gen. n.**			Eul	Newly described in this paper.
***Deutereulophus* Schulz**		Ela	Eul	Newly recorded from North America in this paper.
***Diaulinopsis* Crawford**	Ela	Oph	Eul	
Diaulomorpha Thomson	Eul	Ela		Not known from North America, see discussion.
***Dicladocerus* Westwood**	Eul		Eul	
***Diglyphomorpha* Ashmead**			Eul	Newly recorded from North America in this paper.
***Diglyphus* Walker**	Eul	Oph	Eul	
***Dimmockia* Ashmead**	Eul		Eul	
***Elachertus* Spinola**	Ela	Ela	Eul	
***Eulophus* Geoffroy**	Eul		Eul	
***Euplectromorpha* Gir.**	Eup	Eup	Eul	Newly recorded from North America in this paper.
***Euplectrus* Westwood**	Eup	Eup	Eup	
Giraultia Gahan and Fagan	Ela	Oph	Eul	Synonym of *Cirrospilus*
***Grotiusomyia* Gir.**	Ela		Eul	
***Hemiptarsenus* Westwd.**	Eul	Eul	Eul	
***Hoplocrepis* Ashmead**	ENT		Eul	Transferred to Eulophinae from Entedoninae by Schauff (1991).
***Hyssopus* Gir.**	Ela	Ela	Eul	
***Miotropis* Thomson**	Ela	Ela	Eul	
Mirolynx Girault	Ela		Eul	Synonym of *Aulogymnus*
Mirzagrammosoma Gir.	Ela		Eul	Synonym of *Zagrammosoma*
***Necremnus* Thomson**	Eul		Eul	
Notanisomorpha Ashmead	Eul	Eul	Eul	Synonym of *Hemiptarsenus*
***Notanisomorphella* Gir.**		Eul	Eul	Newly recorded from North America in this paper.
***Paraolinx* Ashmead**	Ela		Eul	
Pardiaulomella Gir.	Eul	Eul	Eul	Synonym of *Sympiesis*
Peckelachertus Yoshimoto	Ela		TET	Removed to Tetrastichinae by Graham (1977).
***Platyplectrus* Ferrière**		Eup	Eup	Newly recorded in North America in this paper.
***Pnigalio* Schrank**	Eul	Eul	Eul	
Pseudolynx Gir.	Ela		Eul	Synonym of *Aulogymnus*
Scotolinx Ashmead	Ela	Oph	Eul	Synonym of *Aulogymnus*
Stenomesius Westwood	Ela	Ela	Eul	Not known from North America, see discussion

Table 2. Continued.

Generic Name	Burks 1979	Boucek 1988	Present Paper	
***Sympiesis* Förster**	Eul	Eul	Eul	
***Trichospilus* Ferrière**		Eul	Eul	Newly recorded in North America by Bennett et al. (1987).
Winnemana Crawford	TET	Oph	Eul	Transferred from Tetrastichinae to Eulophinae, and synonymized with *Cirrospilus*, by Graham (1975).
***Xanthellum* Erdös & Nov.**			Eul	Newly recorded in North America in this paper.
***Zagrammosoma* Ashmead**	Ela	Oph	Eul	

In this paper we recognize only two tribes in the Eulophinae: Eulophini and Euplectrini. The Euplectrini are demonstrably monophyletic on the basis of greatly lengthened hind tibial spurs. The separation of the Eulophini from the remaining tribes, as discussed above, is tentative at best. Since these latter tribes cannot be keyed, their limits are vague, and their monophyly has not been supported, we feel that it is not necessary to maintain them in this paper. Indeed, the Eulophini may be paraphyletic with respect to the Euplectrini, however we are retaining these two tribes in the absence of a more detailed study of relationships.

Table 2 lists all genera of Eulophinae treated in this paper, and shows their tribal placement according to Burks (1979), Boucek (1988), and the present paper.

Genera Removed from Eulophinae since Burks, 1979

Apterolophus Gahan

Burks (1979: 982) treated *Apterolophus* in the Elachertini. It has since been moved to the Tetrastichinae and synonymized with *Tetrastichomyia* (LaSalle and Schauff 1990).

Peckelachertus Yoshimoto

Burks (1979: 983) treated *Peckelachertus* in the Elachertini. It ha since been moved to the Tetrastichinae (Graham 1977, 1991).

Genera New to North American Eulophinae since Burks, 1979

The following genera, (also included in the list of genera given below), were not included in the Eulophinae by Burks (1979) (see table 2): *Hoplocrepis* Ashmead, *Dasyeulophus* Schauff and LaSalle, **Gen. n.**, *Platyplectrus* Ferrière, *Trichospilus* Ferrière, *Winnemana* Crawford, *Colpoclypeus* Lucchese, *Xanthellum* Erdös and Novicky, *Diglyphomorpha* Ashmead, *Notanisomorphella* Girault, *Deutereulophus* Schulz, and *Cristelacher*, Schauff and LaSalle, **Gen. n.**

List of North American Eulophinae Genera

(Valid genera numbered and in bold face).

In those cases where there have been no changes since Burks (1979), we have only listed the generic name.

Ardalus Howard [see *Elachertus*]

1. *Aulogymnus* Förster

Aulogymnus Förster, 1851: 24. Type species *Aulogymnus aceris* Förster (monotypy).

Mirolynx Girault, 1916a: 131. Type species *Mirolynx flavitibiae* Girault. (orig. desig.) **Syn. n.**

Pseudolynx Girault, 1916b: 152. Type species *Pseudolynx io* Girault. (orig. desig.) **Syn. n.**

Scotolinx Ashmead, 1904: 354. Type species *Scotolinx gallicola* Ashmead (orig. desig.). Synonymized with *Aulogymnus* by Boucek (1988: 609).

Discussion: Study of the type species of European species of *Aulogymnus* convinced us that the two genera described from North America (*Mirolynx* and *Pseudolynx*) were

synonymous with *Aulogymnus*. All species included in the genera *Mirolynx* and *Pseudolynx* are here transferred to *Aulogymnus*. *Scotolinx* was not listed in the North American catalogue (Burks, 1979), however, Gordh (1977) described a North American species, *S. californica,* which we are transferring to *Aulogymnus*.

New Combinations: From *Mirolynx*: *flavitibiae* (Girault 1916a); from *Pseudolynx*: *flavimaculata* (Girault 1916b), *io* (Girault 1916b), *marilandia* (Girault 1917e); from *Scotolinx*: *californica* (Gordh 1977).

Cirrospiloideus Ashmead [see *Elachertus, Miotropis*]

2. *Cirrospilus* Westwood

Cirrospilus Westwood, 1832: 128. Type species *Cirrospilus elegantissimus* Westwood (by monotypy).

Winnemana Crawford, 1911: 620. Type species *Winnemana argei* Crawford. (orig. desig.) Synonymized with *Cirrospilus* by Graham, 1975.

Cirrospilopsis Girault, 1915a: 263. Type species *Cirrospilopsis nigrivariegatus* Girault (orig. desig.). Preoccupied by *Cirrospilopsis* Brèthes, 1913.

Giraultia Gahan and Fagan, 1923: 66. Replacement name for *Cirrospilopsis* Girault, 1915a (not *Cirrospilopsis* Brèthes, 1913). Synonymized with *Cirrospilus* by Boucek, 1988.

Discussion: Giraultia Gahan and Fagan (a replacement name for *Cirrospilopsis* Girault), was treated as valid by Burks (1979), but has since been synonymized with *Cirrospilus* (Bouček, 1988). We are here transferring all North American species which had been in *Giraultia* to *Cirrospilus*. *Winnemana* was included in the Tetrastichinae by Burks (1979), however, it was transferred to the Eulophinae and synonymized with *Cirrospilus* by Graham (1975).

New Combinations: From *Giraultia*: *fuscipennis* (Girault 1916e), *metallicus* (Girault 1917g), *sapienta* (Girault 1917c).

3. *Colpoclypeus* Luccheses

Colpoclypeus Lucchese, 1941: 33. Type species *Eulophus florus* Walker: 1839 (= *silvestrii* Lucchese) (by monotypy).

Discussion: This genus has not been previously reported from North America. However, specimens in the USNM from Wenatchee, Washington reared from *Pandemis pyrusana* were recently determined by one of us (MES) as *C. florus*.

4. *Cristelacher* Schauff and LaSalle, gen. n.

Discussion: This genus is described to contain *Elachestus levana* (Walker) (the only included species). A full description of this genus is given at the end of this paper.

New Combinations: From *Stenomesius*: *levana* (Walker 1847).

5. *Dahlbominus* Hincks

6. *Dasyeulophus* Schauff and LaSalle, gen. n.

Discussion: This genus is described to contain *Grotiusomyia gelechiae* Miller (the only included species). A full description is given at the end of this paper.

New Combinations: From *Grotiusomyia*: *gelechiae* (Miller 1964).

7. *Deutereulophus* Schulz

Eulophopteryx Ashmead, 1904: 341, 342, 374. Type species *Eulophopteryx chapadae* Ashmead (original designation). Preoccupied by *Eulophopteryx* Möschler, 1878: 684.

Deutereulophus Schulz, 1906: 146. Replacement name for *Eulophopteryx* Ashmead, 1904 (not *Eulophopteryx* Möschler, 1878).

Entedonomorpha Girault, 1913: 261. Type species *Entedonomorpha tennysoni* Girault (original designation). Synonymy by LaSalle and Schauff, 1992: 17.

Discussion: The identity of this genus was discussed by LaSalle and Schauff (1992). It was included in a key to Australasian genera

by Boucek (1988—as *Entedonomorpha*). There are at least three undescribed species in this genus from North America (USNM, CNC), which range from Texas to Florida, and as far north as Ontario.

8. *Diaulinopsis* Crawford

Note: Revision of New World species by Gordh and Hendrickson (1979).

Diaulomorpha Ashmead [see *Dicladocerus*]

Discussion: Diaulomorpha is not presently known from North America. The single species which was assigned to this genus, *D. borrowi* (Girault), is now placed in *Dicladocerus.*

9. *Dicladocerus* Westwood

Discussion: The single species assigned to the genus *Diaulomorpha* (*borrowi*) is now placed here.

New Combinations: From *Diaulomorpha*: *borrowi* (Girault 1917a).

10. *Diglyphomorpha* Ashmead

Diglyphomorpha Ashmead, 1904: 352. Type species *Diglyphus maculipennis* Ashmead [= *D. aurea* (Howard)] (orig. desig.).

Discussion: This genus has not been recorded previously from North America, although it is known from the Caribbean and has been discussed by LaSalle and Schauff (1992). We have seen a specimen of *D. aurea* (Howard, 1894) from Florida (Dade Co., Miami, 6.iii.1984, C. M. Yoshimoto, 1 female, CNC). For information on this species see LaSalle and Schauff, 1992: 18.

11. *Diglyphus* Walker

Note: Revision of New World species by Gordh and Hendrickson (1979).

12. *Dimmockia* Ashmead

13. *Elachertus* Spinola

Elachertus Spinola, 1811: 151. Type species *Diplolepis lateralis* Spinola (by monotypy; other included names were not available).

Ardalus Howard, 1897: 161. Type species *Ardalus aciculatus* Howard (= *scutellatus* (Howard), see Bouček 1988) (subs. desig. of Ashmead, 1904: 352). Synonymized with *Elachertus* by Bouček, 1988: 639.

Cirrospiloideus Ashmead, 1904: 354. Type species *Miotropis platynotae* Howard (orig. desig.). **Syn. n.**

Discussion: We are synonymizing *Cirrospiloideus* and *Elachertus.* Given the range of variation in these taxa, we can find no reliable characters which separate the two groups. Bouček (1988) mentioned that *Cirrospiloideus* was thought to be the same as *Miotropis.* We find that most of the North American species do belong in *Miotropis.* However the type of *Cirrospiloideus* (*platynotae*), is *Elachertus.*

Miotropis platynotae (type of *Cirrospiloideus*) was described from 6 specimens (Howard 1885). The lectotype female (**present designation**) is point mounted with three other specimens. The lectotype is the bottom specimen and the point has been marked with black ink. There are 5 paralectotypes on two pins (3 with lectotype and 2 on a separate pin). All in USNM.

We are transferring *harrisinae* Ashmead from *Stenomesius,* although it is quite distinct from most of the other species of *Elachertus* and from related genera such as *Alophomyia.* However, given the confusion about generic limits in this group of genera, we feel that it would be unwise to describe yet another genus for this single species and thereby further confuse the situation.

New Combinations: From *Cirrospiloideus*: *platynotae* (Howard 1885). From *Stenomesius*: *harrisinae* (Ashmead 1887).

Note: Revision of North American species by Schauff (1985a).

14. *Eulophus* Geoffroy

Eulophus Geoffroy, 1762. Type species *Ichneumon ramicornis* Fabricius (subseq. monotypy of Fabricius, 1781: 441).

Discussion: The authorship and type species of *Eulophus* is presently the matter of some controversy, and different combinations of author and type species have been used in Europe (Bouček and Askew 1968) and North America (Peck 1963, Burks 1979). An attempt to stabilize the name *Eulophus* is currently before the International Commission of Zoological Nomenclature (Kerzhner 1991), with a supporting comment which suggested a minor amendment by LaSalle (1992). We are using authorship and type species as recommended by Kerzhner and LaSalle.

15. *Euplectromorpha* Girault

Euplectromorpha Girault, 1913: 276. Type species *Euplectromorpha unifasciata* Girault (original designation).

Neoplectrus Ferrière, 1940: 134. Type species *Neoplectrus bicarinatus* Ferrière (subsequent designation of Bouček, 1988: 634).

Discussion: The identity of *Euplectromorpha* was discussed by Boucek (1988) who included it in a key to Australasian genera and made the above generic synonymy. The single North American species currently placed in this genus, *E. americana,* properly belongs in *Platyplectrus.* However, *Euplectromorpha* is represented in North America by an undescribed species from Florida (Monroe Co., Crane Key, 16/IV/1976, D. Simberloff, reared from *Alarodia slossoniae,* 4 females, USNM).

16. *Euplectrus* Westwood

Giraultia Gahan and Fagan [see *Cirrospilus*]

17. *Grotiusomyia* Girault

Note: see *Dasyeulophus* for discussion of *Grotiusomyia gelechiae* Miller.

18. *Hemiptarsenus* Westwood

Hemiptarsenus Westwood, 1833: 122–123. Type species *Hemiptarsenus fulvicollis* Westwood (subsequent designation of Westwood 1839).

Notanisomorpha Ashmead, 1904: 356. Type species *Notanisomorpha collaris* Ashmead (orig. desig.). **Syn. n.**

Discussion: Bouček (1988) suggested that *Notanisomorpha* might be nothing more than a species group of *Hemiptarsenus.* We agree with this interpretation and therefore propose the synonymy above. Miller (1970) separated the two genera based on the relative length to width of the propodeum and petiole. We find this character to be variable and do not believe that it can be used reliably to separate these species.

New Combinations: All from *Notanisomorpha*: *ainsliei* (Crawford 1912), *calavius* (Walker 1847); *collaris* (Ashmead 1904), *longifasciata* (Girault 1917a), *meromyzae* (Gahan 1917), *nevadensis* (Girault 1917a).

19. *Hoplocrepis* Ashmead

Discussion: This genus was treated in the Entedoninae by Burks (1979), however it has since been transferred to the Eulophinae (Schauff, 1991: 73).

20. *Hyssopus* Girault

Note: Revision of Nearctic species by Schauff (1985b).

21. *Miotropis* Thomson

Discussion: The genus *Cirrospiloideus* is synonymized with *Elachertus* (in this paper), however only the type species, *platynotae,* actually belongs to *Elachertus.* The majority of the North American species which had been placed in this genus properly belong in *Miotropis,* and are here transferred. See the also discussion of this genus under *Elachertus.*

New Combinations: All from *Cirrospiloideus*: *bicoloriceps* (Girault 1916e), *californicus* (Girault 1916c), *johnsoni* (Girault 1917a), *mediolineatus* (Girault 1917b), *nigriceps* (Girault 1916d), *nigriprothorax* (Girault 1916a), *seminigriventris* (Girault 1917c).

Mirolynx Girault [see *Aulogymnus*]

Mirzagrammosoma Girault [see *Zagrammosoma*]

22. *Necremnus* Thomson

Notanisomorpha Ashmead [see *Hemiptarsenus, Sympiesis*]

We are synonymizing *Notanisomorpha* with *Hemiptarsenus* in this paper. Most North American species currently assigned to *Notanisomorpha* belong to *Hemiptarsenus,* but two are properly assigned to *Sympiesis.*

23. *Notanisomorphella* Girault

Notanisomorphella Girault, 1913: 287. Type species *Notanisomorphella australiensis* Girault (original designation).

Crateulophus Masi, 1917: 206. Type species *Crateulophus niger* Masi (monotypy).

Raurua Risbec, 1952: 188. Type species *Raurua australis* Risbec (monotypy).

Sunha Delucchi, 1962: 53. Type species *Sunha bicolor* Delucchi (original designation).

Discussion: The identity of *Notanisomorphella* was discussed by Boucek (1988) who included it in a key to Australasian genera and made the above generic synonymies. We know this genus from North America from a single specimen of an undescribed species from West Virginia (Morgantown, summer 1929, E. Gould, par. of *Coleophora malivorella,* 1 female, USNM).

24. *Paraolinx* Ashmead

Pardiaulomella Girault [see *Sympiesis*]

25. *Platyplectrus* Ferrière

Platyplectrus Ferrière, 1941: 20. Type species *Platyplectrus natadea* Ferrière (orig. desig.).

Discussion: The genus *Platyplectrus* has not previously been recorded from North America. The genus *Euplectromorpha* was recorded in North America based on *E. americana* Girault. We find that this species is a member of the genus *Platyplectrus* and not *Euplectromorpha.*

New Combinations: From *Euplectromorpha*: *americana* (Girault 1916g).

26. *Pnigalio* Schrank

Pseudolynx Girault [see *Aulogymnus*]

Scotolinx Ashmead [see *Aulogymnus*]

Stenomesius Westwood

Two species were assigned to this genus by Burks (1979). Both are here transferred to other genera (*levana* to *Cristelacher,* n. gen., and *harrisinae* to *Elachertus*). At present, no species from North America can be assigned to *Stenomesius.* However, given that the genus does occur in several areas adjacent to the U.S., it is likely that some species of *Stenomesius* do occur in North America.

27. *Sympiesis* Förster

Sympiesis Förster, 1856: 74, 76. Type species *Eulophus sericeicornis* Nees (orig. desig.).

Pardiaulomella Girault, 1915b: 295. Type species *Pardiaulomella consonus* Girault. (orig. desig.). Synonymized by Boucek (1988: 620).

Discussion: The genus *Pardiaulomella* was listed by Burks (1979) as separate from *Sympiesis* with one included species. Boucek (1988) synonymized the two genera, but did not transfer the North American species. We formally make that transfer here along with two species from *Notanisomorpha.*

New Combinations: From *Notanisomorpha*: *noncarinata* (Girault 1917a), *particola* (Girault 1916f).; from *Pardiaulomella*: *ibseni* (Girault 1916d).

28. *Trichospilus* Ferrière

Trichospilus Ferrière, 1930: 358. Type species *Trichospilus pupivorus* Ferrière (monotypy).

Discussion: Trichospilus is native to tropical Africa and Asia. One species, *T. diatraeae* Cherian and Margabandhu (1942), has been established in the West Indies, and recorded from Florida (Bennett et al. 1987).

Winnemana Crawford [see *Cirrospilus*]

29. *Xanthellum* Erdös and Novicky

Xanthellum Erdös and Novicky, in Erdös 1951: 178. Type species *Xanthellum transsylvanicum* Erdös (orig. desig.).

Discussion: This genus has not been recorded previously from North America. We have seen specimens of *X. transsylvanicum* Erdös (1951) from Ontario (CNC) and Massachusetts (USNM). We have also examined specimens of an apparently undescribed species from Ohio (USNM).

30. *Zagrammosoma* Ashmead

Hippocephalus Ashmead, 1888: vii. Type species *Hippocephalus multilineatus* Ashmead (by monotypy). Preoccupied by *Hippocephalus* Swainson, 1839.

Zagrammosoma Ashmead, 1904: 354. Replacement name for *Hippocephalus* Ashmead 1888.

Mirzagrammosoma Girault, 1915a: 279. Type species *Mirzagrammosoma lineaticeps* Girault (by monotypy). Synonymized with *Zagrammosoma* by LaSalle (1989).

Discussion: The nearctic species were reviewed by Gordh (1978). LaSalle (1989) synonymized *Mirzagrammosoma* with *Zagrammosoma,* and transferred the single species, *M. lineaticeps* Girault, to *Zagrammosoma.*

Subfamily EUDERINAE

Burks (1979) considered the Euderinae as a tribe of the Entedoninae, however they have been considered to deserve subfamily status by other authors (Graham 1987, Bouček 1988, Grissell and Schauff 1990). We currently recognize 5 genera from North America.

Genera New to North American Euderinae since Burks, 1979

The following genera, which are here considered to belong to the Euderinae, were included in the Entedoninae by Burks (1979): *Carlyleia* Girault (transferred here), *Hubbardiella* Ashmead (transferred by Schauff 1991) and *Lophocomus* Haliday (the North American species = *Euderus*).

List of north american euderinae Genera

1. *Acrias* Walker

2. *Astichus* Förster

Bellerus Walker [see *Euderus, Lophocomus*]

Schauff (1991: 72) mentioned *Bellerus* as the proper senior synonym to *Lophocomus,* which had been placed in the Entedoninae in the North American catalogue (Burks 1979). This genus is not known from North America (see discussion under *Lophocomus, Euderus*).

3. *Carlyleia* Girault

Discussion: This genus was included in the Entedoninae by Burks (1979). Schauff (1991: 72), stated that it was clearly not an entedonine, and suggested that it might better belong to the Eulophinae. After further examination we feel that it belongs in the Euderinae.

4. *Euderus* Haliday

Discussion: This is the largest genus of Euderinae. The single North American species which had been placed in the genus *Lophocomus, L. verticillatus* Ashmead, properly belongs in *Euderus.* Schauff (1991) removed this species from the Entedoninae (Burks 1979) to the Euderinae, but did not reassign it to its proper genus.

New Combinations: From *Lophocomus: verticellatus* (Ashmead) (1888).

5. *Hubbardiella* Girault

Discussion: This genus had been included in the Entedoninae by Burks (1979). Schauff (1991) placed it in the Euderinae.

Lophocomus Haliday [see *Euderus*]

Lophocomus had been placed in the Entedoninae by Burks (1979), however it is a junior synonym of *Bellerus* and properly belongs in the Euderinae (Boucek 1963; Schauff 1991). *Bellerus* is known only from southern South America, and the single North American species which had been assigned to this genus, *verticellatus* Ashmead, properly belongs in *Euderus*.

Subfamily ENTEDONINAE

The Entedoninae has been treated recently (Schauff 1991). In the course of this study, a new synonymy has come to light, and further investigations have caused us to place *Euderomphale* back in the Entedoninae. However, we continue to regard this placement as provisional as these species do not share all the characters that define the subfamily. The authors are currently studying a group of taxa (all parasites of whiteflies) related to *Euderomphale* to better clarify the suprageneric classification of this group.

Eprhopalotus Girault

Eprhopalotus Girault, 1916d: 49. Type species *Eprhopalotus purpureithorax* Girault (orig. desig.).

Aabacharis Schauff, 1991: 32. Type species *Aabacharis hansoni* Schauff (orig. desig.). **Syn. n.**

Discussion: Schauff (1991) stated that he was unable to place the fragmented type of *E. purpureithorax*. Upon reexamination of this specimen, we conclude that it is the same genus as *Aabacharis* and have proposed the synonymy above. It remains uncertain whether *E. hansoni* (**Comb. n.**) is the same species as *E. purpureithorax*.

New Combinations: From *Aabacharis*: *hansoni* Schauff (1991).

Euderomphale Girault

Discussion: The placement of this genus is problematical. Schauff (1991) removed it from the Entedoninae because it lacked all the characters that defined the subfamily. However we are currently investigating the relationships of *Euderomphale* and several related genera (LaSalle and Schauff, in prep), and we now feel that it is better placed in the Entedoninae than in any other subfamily.

Description of New Taxa

Cristelacher Schauff and LaSalle Gen. n.

Type species: Elachestus levana Walker.

Discussion: This genus seems most closely allied to *Elachertus,* particularly in the following characters: mesoscutum with notauli complete (although fine), and with many, scattered setae; scutellum glabrate and with strong sublateral grooves which curve inward and meet in front of posterior margin; propodeum glabrous, with strong median carina which is expended anteriorly into a cup-shaped structure. The petiole is also generally quite long in species of *Elachertus*. The main characters which set this genus aside are the distinct carinae on the pronotum and head. The pronotum is quadrate, with a very strong transverse carina along the anterior margin. This form of pronotum is unknown in other North American Eulophini, although some Euplectrini may have a strong anterior carina on the pronotum. The only non-euplectrine Eulophinae which have a pronotum similar to *Cristelacher* are the extralimital *Euplectrophelinus* Girault and *Stenopetius* Bouček (see Bouček 1988 for a discussion of these genera). *Stenopetius* differs from *Cristelacher* in having an x-shaped median carina on the propodeum (as in *Stenomesius*). *Euplectro-*

phelinus differs in not having a distinct petiole, and having the axillae approaching each other medially (almost touching). Neither *Stenopetius* or *Euplectrophelinus* have two carinae on the back of the head as in *Cristelacher. Stenopetius* has a distinct carina behind the ocelli, which defines a large, concave occipital region (without another carina). *Euplectrophelinus* lacks carinae (or has the occipital carina very weakly represented).

Diagnosis: Pronotum large, quadrate with a strong transverse carina on anterior margin. Occipital region with two carinae; a transverse carina on the vertex just behind ocelli, and a strong, horseshoe-shaped occipital carina. Metasoma with distinct and long petiole. Otherwise similar to *Elachertus,* with many scattered setae on mesoscutum, and scutellum glabrate and with strong sublateral grooves which curve inward and meet in front of posterior margin.

Description: Female. Face and frons without sculpture, smooth and shiny; vertex with light, engraved sculpture. Scrobes shallow. Vertex behind ocelli with transverse carina, and back of head with strong, horseshoe-shaped occipital carina. Malar sulcus present and fine. Clypeal margin smooth, slightly convex. Antennal toruli placed at level of ventral eye margin. Mandibles with strong lower tooth, and several small upper teeth. Antenna with scape long and slender. Funicle with four segments, all of which are distinctly longer than wide, and short 3-segmented club. Pronotum large, quadrate; anterior margin with strong transverse carina. Notauli present and complete, although fine. Mesoscutum and axilla glabrous. Scutellum with deep sublateral grooves which curve inward and meet before posterior margin. Propodeum glabrous, with strong median carina which is set in a distinct furrow; median carina expanded anteriorly into a cup-shaped structure; propodeum with lateral groove between spiracle and raised median panel. Hind tibia with two spurs. Petiole distinct, as long as hind coxa and over half the length of the gaster, widest in basal half, tapering apically. Gaster short, ovate. Basal sternites extending forward to wrap around apex of petiole where it joins gaster. Cerci placed on small pegs. Wings typical for eulophines, with several setae on dorsal surface of submarginal vein, submarginal vein smoothly joining parastigma, postmarginal vein longer than stigmal vein.

Male. Unknown.

Etymology: A combination of *crista,* meaning crest or ridge, and *elacher,* a short form of *Elachertus.* Gender Masculine.

Included species: Cristelacher levana (Walker). **(Comb. n.).** There is presently only the single species, *C. levana* (Walker) included in this genus.

Note: Burks (1975: 145) designated a lectotype for this species and placed it in the genus *Stenomesius,* where it has remained since. The lectotype and paralectotype are in the BMNH.

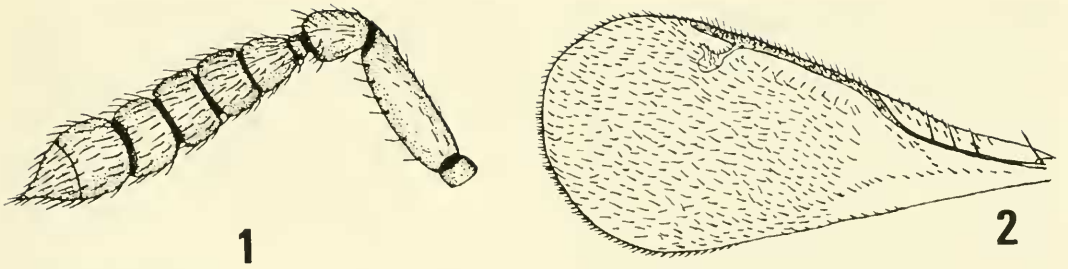
Dasyeulophus Schauff and LaSalle Gen. n.

(Figs. 1–5)

Type species: Grotiusomyia gelechiae Miller, 1964.

Discussion: Scutellum (and mesoscutum) covered with evenly scattered setae; those on the scutellum semi-erect. Notaulus not reaching posterior margin of mesoscutum. Clypeus bilobed. Antenna with a 4-segmented funicle and 2-segmented club; funicular segments all quadrate to wider than long. Propodeum medially short, not or only barely longer than dorsellum. Mandibles multidentate. Vertex without carina behind occiput. Female body yellow, male body yellow and brown or black, both without metallic coloration. Male antenna without branches.

Grotiusomyia was described by Girault (1917d) for his species *flavicornis.* Miller



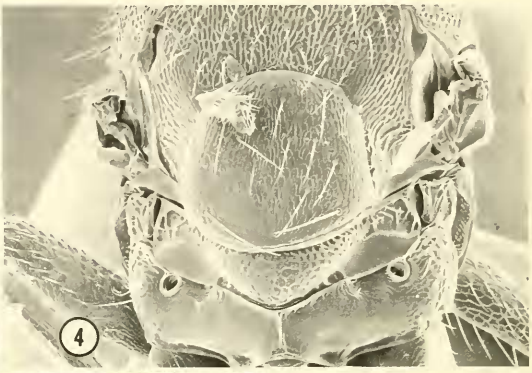
Figs. 1, 2. 1) Female antenna of *Dasyeulophus gelechiae.* 2) Forewing of *D. gelechiae.*

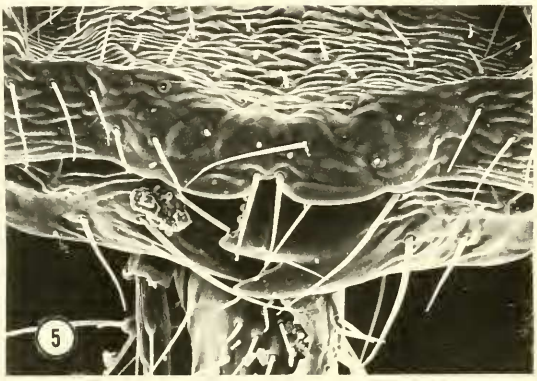
separated *gelechiae* from *flavicornis* based upon differences of the pronotum (campanulate rather than transverse quadrate), the propodeal spiracles (round rather than elliptical) and additional differences on the abdomen. Miller did not mention that the clypeal margin in *flavicornis* is produced, a condition not found in *gelechiae,* which has the clypeus bilobed, but not noticeably produced.

Diagnosis: Dasyeulophus is similar to the eulophine genera *Dimmockia, Grotiusomyia,* and *Sympiesis.* From *Dimmockia* it can be separated by the setose scutellum (scutellum with only 2 pairs of setae in *Dimmockia*). In addition, the known species of *Dimmockia* are black in color, not yellow as in *Dasyeulophus.* Species of *Grotiusomyia* can be separated by the shape of the notauli (weak, but continuing to the posterior margin of the mesoscutum); presence of an undivided clypeus; the presence of an occipital carina behind the occelli (rounded in *Dasyeulophus*); and the ovoid propodeal spiracle (spiracle round in *Dasyeulophus*). Species of *Sympiesis* have the funiculars quadrate to longer than wide (generally longer than wide) as opposed to wider than long in *Dasyeulophus,* have an undivided clypeus, and have only a few paired setae on the scutum and scutellum.

Description: Female. Head, mesosoma, and legs yellow. Funicle sometimes slightly darker, especially apically. Metasoma yellow with extensive brown markings on dorsal surface (some specimens with metasoma almost entirely brown dorsally except at base). Antennae (Fig. 1, from Miller 1964) nine-segmented with one annellus, four funicular segments, and a 2-segmented club; mandibles multi-dentate (9 or 10 toothed). Clypeus bilobed (Fig. 5). Pronotum campanulate (Fig. 3), about one third length of mesoscutum; mesoscutum with notauli incomplete, covered by numerous scattered setae; axillae advanced almost entirely beyond scuto-scutellar suture; scutellum with scattered setae (about 14–16), but less densely than mesoscutum, without longitudinal grooves. Propodeum medially only slightly longer than metanotum, (Fig. 4) with simple median carina, spiracular opening round, smooth; petiole reduced to narrow strip dorsally. Metasoma subsessile, slightly longer than head and thorax combined. Forewing hyaline (Fig. 2), submarginal vein with 7–8 setae, speculum closed; postmarginal shorter than marginal vein, about 1.5× as long as stigmal; stigma enlarged, ovate, covered with several setae.

Male. Dark brown except scape, face below toruli and adjacent to eye margins, basal ⅓ to ½ of metasoma, fore and midlegs, including coxae; base of hindfemora, hindtibiae and tarsi yellow. Flagellar setae are longer, about equal to width of each funicle. Metasoma about equal in length to the thorax. Otherwise, similar to the female. In





Figs. 3–5. Scanning electron micrographs of *Dasyeulophus gelechiae.* 3) Dorsal thorax. 4) Propodeum. 5) Mandibles and clypeus.

some specimens, the midfemur and hindtibia are partly brownish.

Etymology: Generic name from dasy— meaning hairy, and eulophus. Gender masculine.

Included species: Dasyeulophus gelechiae (Miller). **(Comb. n.)**. There is presently only the single species, *D. gelechiae* (Miller) included in this genus.

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